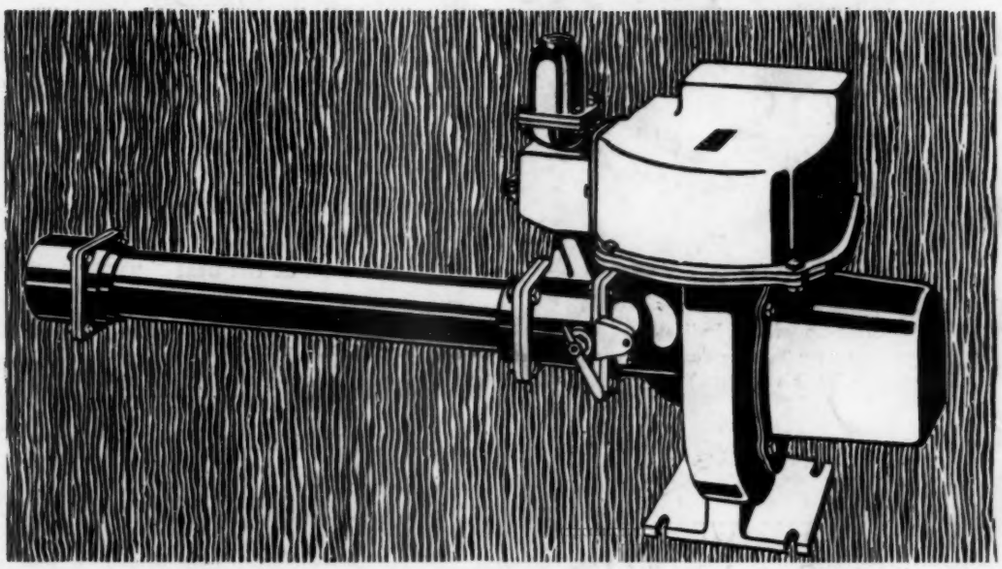
American
# GAS JOURNAL
Formerly American Gas Light Journal
EST. 1859

VOL. 117. NO. 30.
WHOLE NO. 3885.

NEW YORK, SATURDAY, DECEMBER 23, 1922

Subscription $3 per year
$4 Canada, $5 Foreign



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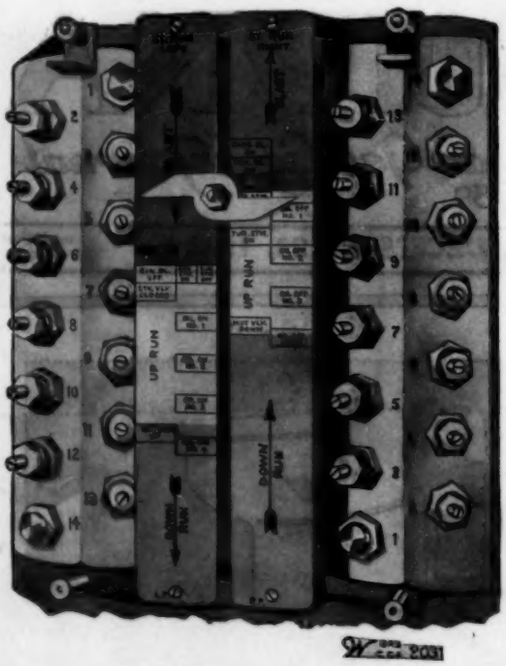


Close-up of the Indicator
(The Cover plates over Timing Screws were removed for this picture.)

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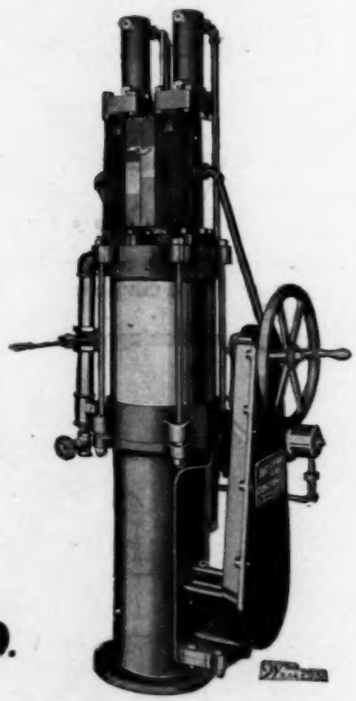

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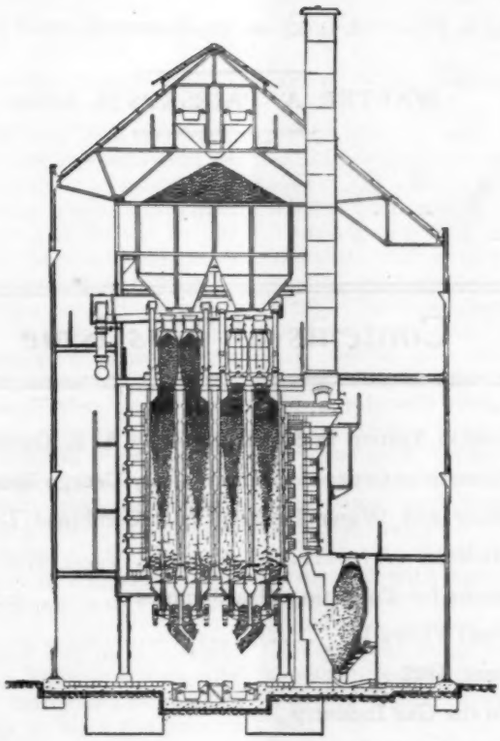

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# American Gas Journal

*SIXTY-THIRD YEAR*

*Published Weekly by American Gas Light Journal, Inc., 53 Park Place, New York, N. Y.*

ELBERT P. CALLENDER, Pres. S. G. KRAKE, Vice-Pres.-Treas. A. M. GLEASON, Sec'y.

WALTER A. FAIRSERVIS, Editor

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Subscription $3.00 per year, including postage, in the United States, Mexico, Cuba, Porto Rico, Hawaii or the Philippines; in Canada, $4.00; foreign, $5.00—Single Copies, 10 cents.

AMERICAN GAS JOURNAL, Dec. 23, 1922. Vol. 117, No. 30. Published weekly by American Gas Light Journal, Inc., New York, N. Y. Entered as second-class matter Jan. 9, 1917, at the post-office at New York, N. Y., under the Act of March 3, 1879.

American Gas Journal
Formerly American Gas Light Journal

Vol. 117, No. 30 NEW YORK, DECEMBER 23, 1922 Whole No. 3385

# Gas Distribution System in San Diego*

## Pick, Shovel and One Horse Wagon Replaced by Modern Methods

By A. R. GITTINGS, Supt. of Gas Distribution, San Diego (Cal.) Consolidated Gas & Electric Co.

When H. M. Byllesby & Company took over this plant in 1905, the distribution system consisted of approximately 35 miles of low pressure mains and some 1,500 services. A one-horse wagon contained all the construction and service tools owned by the company; it was drawn by one thoroughbred scrub California cayuse, which worked half the time in reverse and had more mean tricks than the modern flivver, and which could and did roll wagon, tools and all from the top to the bottom of Third street canyon without injury to life, limb or appetite.

Our October, 1922, reports show that our distributing system has expanded until we now have 250 miles of low pressure and 317 miles of high pressure mains, and the number of services has increased from 1,500 to 33,000, supplying 33,678 meters; and in place of "Old Dobbin," this department now has a fleet of 23 automobiles, flivvers and trucks.

As our services average 60 feet in length, we have 375 miles of services, which with our mains makes a total pipe length of 942 miles.

Supposing our pipe were laid out in a straight line, it would extend from San Diego to Roseville, Oregon, and according to the Southern Pacific train schedule, if it became necessary to open the drip on the end of our line, we could have a troubleman leave here on the 3 p. m. train on Friday, and he could step off the train at the end of our line on Sunday at 1.30 p. m., this schedule being for the fastest trains.

The present value of our gas distribution system is:

| | |
|---|---|
| Mains | $1,592,700.00 |
| Meters | 398,600.00 |
| Services | 634,200.00 |
| Regulators | 147,000.00 |
| Transportation, Buildings and Miscellaneous | 119,300.00 |
| Total | $2,891,800.00 |

It is said that in San Diego County we have every variation of climate according to elevation, distance from the coast, etc. Whether this is true or not, we certainly can claim every variety of soil, and as the gas pipes are uniformly laid in the ground, this point is naturally of great interest to us.

We have a very, very small area of just plain sand; a somewhat larger area of what is commonly called soil (that is, earth which if you decorate it with a limb plucked from a fig tree and a cutting from a grape vine, and turn the hose on them occasionally, will in the course of a few years permit you to sit peacefully under your own vine and fig tree). Then we have a much larger area of what is called hard pan; an area about the same size of soil known as concrete gravel; and whole square miles of stuff called adobe, which when it is wet one cubic mile will stick to each foot, and when dry will defy a stroke of lightning. Also we have other types of geological formations which, should I describe them in the language of our unregenerate construction gangs, as I would like to, this would be barred from the mails.

This soil is in most instances impregnated and saturated with samples of all the known acids and chemicals left over at the creation of the world. Our chemist calls them some awful names, but that does not prevent them from attacking our pipes; consequently, we are forced to protect our pipes with an expensive pipe covering in an effort to prolong their life.

In some sections even this will not prevent their destruction in a couple of years, but in general covered pipe will far outlast that unprotected. About 80 miles of our high pressure pipes which were laid prior to 1915, at which time we commenced placing this protective covering, have already been replaced, and replacement of the remainder of the uncovered mains is under way. The acids are not uniformly destructive, as we will frequently find one-half of a length of pipe practically destroyed by this chemical action, while the other half will appear almost as when laid. This condition makes it necessary for us to keep men constantly in the field looking for evidences of escaping gas. Of course, to detect a large leak, all one needs is a fairly good nose and a pick and shovel, but the seepages are troublesome to find, and all count in the general result.

In order to make our excavations for the installation of our pipes, we have tried various means. When this company took over the system the only machinery used in excavating was what is known as a pick, invented, I understand, by a man named Adam, who is supposed to have been at one time the white hope. This was some time ago.

*Reprinted from employees' publication of that company.

### Opened Trenches With a Plow

Later we proceeded to open our trenches with a plow drawn by horses. This method, with modifications, is also supposed to have originated with the party above mentioned. Later when the motor truck came into use we applied this to the plow as motive power, and improvised a motor-drawn blade to back-fill our trenches; following this up by using the same truck for packing the earth back into the trench. As this was rather strenuous work for a truck, upon the advent of the tractor this machine was substituted for the truck and was also provided with an attachment for back-filling the trench. Our latest, but I hope not our last, improvement in trenching machinery is a wheel-type excavator, motor driven, which operates far more cheaply and effectively than any previous method.

Gas as it comes from the production plant is stored in large holders, of which we now have two, one with a capacity of 500,000 cubic feet, and the other with a capacity of 2,000,000 cubic feet. Our third storage holder, now under construction, will have a capacity of 6,000,000 cubic feet. These reservoirs are familiar sights in every city nowadays. When filling they rise in the same way as does a balloon when being inflated, falling upon deflation. The weight of the holder furnishes the pressure which forces the gas through our low pressure system.

This is all automatically regulated by governors at the outlets of the tank to deliver the gas at the six-inch water column pressure at the meter, which is the standard of pressure throughout our system. As 27.7 inches water column pressure equals one pound per square inch, it will be seen that our standard pressure at the meter is a trifle less than one-fourth pound per square inch. Owing to the difference in specific gravity between air and gas, the gas pressure increases at the rate of a trifle less than one inch for every 100 feet of elevation.

Thus, leaving the plant at six inches pressure, where the elevation is 7½ feet, would be about 6½ inches at 28th and National, where the elevation is 60 feet; and about 9½ inches at Park Boulevard and Adams Avenue, where the elevation is 354 feet. This increase in pressure is, however, overcome by the friction of the moving gas in the pipes and by consumption along the route, so that at this distance of four miles during the peak load it is necessary to boost the low pressure lines by supplying them with gas from the high pressure lines by means of large district governors which reduce the pressure, which is often 50 pounds, to the low pressure value.

### Have Battery of Five Compressors

Our high pressure system is fed direct from a battery of five compressors having a maximum capacity of 660,000 cubic feet per hour at 60 pounds pressure. With this initial pressure we are able to maintain a satisfactory pressure at our outlying towns and districts, in addition to boosting the low pressure districts which are some distance from the production plant. In our high pressure districts the pressure is reduced at each customer's premises before reaching the meter by means of small house type regulators.

In addition to San Diego proper, we are supplying the city of East San Diego, the territory immediately north of East San Diego and east of San Diego, known as Normal Heights, the towns of La Mesa, Lemon Grove, Encanto, National City, Chula Vista, La Jolla, Coronado, Pacific Beach and Ocean Beach, as well as all the government stations at Camp Kearney, North Island, Fort Rosecrans, Marine Base, new Naval Training Station and the new Naval Hospital in Balboa Park, and the Radio Stations at Chellas Heights and Point Loma.

Our budget for the next year for additions and improvements to the gas distribution system is well over two hundred thousand dollars. This does not include routine construction, such as mains that may be laid on account of paving or extensions to reach new customers.

Our system has outgrown the city limits in every direction except to the north, where our line eighteen miles in length, supplying the Biological Station at La Jolla, is still seven miles south of the north limits of San Diego. This is one more reason why we predict a million population for San Diego in the next few years—it has the floor space.

Coronado is supplied by one 2-inch and two 4-inch high pressure mains laid across San Diego Bay. It is necessary to have a duplication of these submarine mains on account of the accidents that are frequently occurring to one or the other of these lines. They are laid some distance apart, although all within the "no anchorage" area, on the chance that they will not all be broken at once in case some misguided mariner happens to drop his anchor in the forbidden liquid, as has happened more than once. In preparation for just such an emergency, we now have our own trained crew of divers, and a fully equipped barge and diving apparatus fitted with a set of submarine telephones.

At this time there are 135 men in this department, which includes office men, main construction crews, gas service crews, meter setters and trouble men, diving crew and the gas meter shop.

It should not be out of place to consider that behind these statistics of ancient and modern machinery, hundreds of miles of pipe and great sums of money, are human minds and human hearts and hands to plan and conscientiously execute this work. The value of loyal, conscientious men is evident when we remember that all our pipes are buried in the earth, but a mistake we bury, unlike the doctor's, comes to life again to plague us. A bad joint, an ungraded line, a drip omitted, a pair of gloves or a bunch of waste left in a pipe, soon announces itself.

That we have such men is shown by the fact that the first four construction foremen employed by this company in 1905 are still in charge of the work, and theirs has been the task of training the present force. The trouble and meter men who are of necessity in hourly contact with the public, have no doubt the most trying position. For while ninety-five per cent of people everywhere are reasonable and helpful, the other five per cent will try your very soul, and it is up to these men to smilingly obey the injunction, "If thine enemy smite thee on one cheek, turn the other one also." Even then it sometimes occurs that they do not have cheeks enough.

# Six Years' Growth as Great as Century's

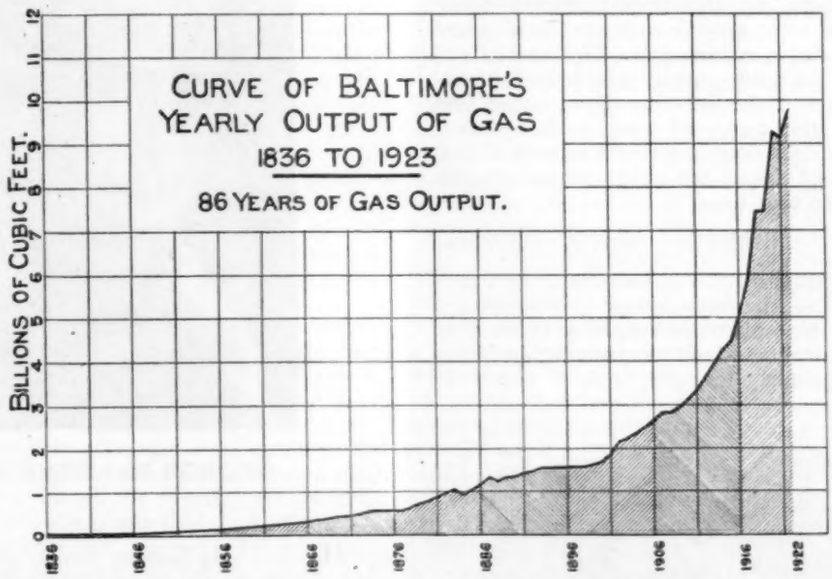
## Last Six Years Equals Growth of 1816 to 1916

By GEORGE BEADENKOPF, Chief Engineer Gas Operations, Consolidated Gas, Electric Light and Power Co., Baltimore, Md.

From 1917 to 1923, a period of six years, the increase in the gas output in Baltimore has been practically as great as in the one hundred years from the incorporation of the company in 1816 to 1916.

The accompanying diagram not only shows the present great upward trend of the gas business in Baltimore, the first city in America to introduce gas, but it also shows the various and varying stages of the gas demand during the past eighty-six years.

The chart starts with the year 1836, about twenty years after the introduction of gas in Baltimore. The industry prior to that time was in a more or less embryonic state, and no accurate records are obtainable showing the amount of gas used from year to year.




At that time gas was not sold by meter. It was a very expensive luxury. Only the stores, public places, churches and the well-to-do residents were able to use it, and then only to a very limited extent, paying for it on the basis of so much per burner. The burners were reckoned as $12 to $14 and $18 burners, of the Argand style, and Fan. If a consumer wanted to pay $12 a quarter for light, he was furnished with a $12 burner; if he chose to pay $14 or $18, he was furnished with a burner accordingly.

Meters for measuring it had not been introduced in the early days. The first meters used for measuring was were "wet" meters imported from England.

### Early Growth Small

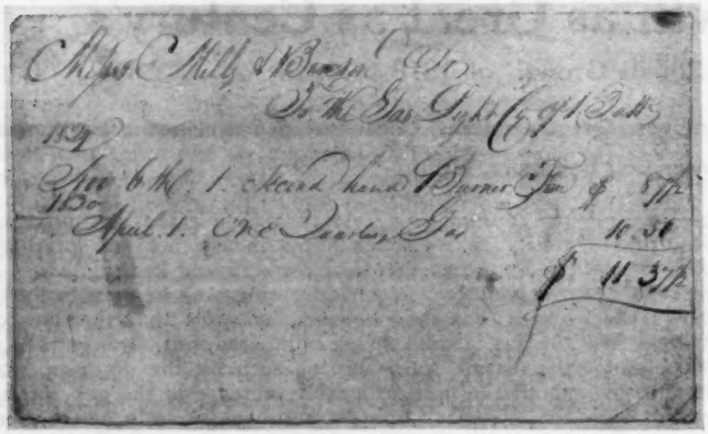
As early as 1846 gas was sold on the basis of so much per hundred cubic feet and by meter. By referring to the diagram it will be noted that from 1836 to 1876, the growth of the business was very slow, practically all gas up to that time being used for illuminating. At that time there was no electricity or Welsbach lights in use, nor had gas been used to any extent for cooking and heating.

About 1881 electric lighting was being introduced and it was then believed by some that the days of the gas business were numbered, but, strange to say, the decade following, as seen by the diagram, was about the first noticeable increase in the gas output, the Welsbach light having been brought out to compete with the electric light. To a limited extent gas also was then being used for cooking, not having yet struck the stride it has since attained for that purpose.

Gas was then made of high candle power, and its heating value was given very little attention, as illumination principally by flat flame burners was the most popular form of light; later, however, as the Welsbach light continued to make inroads into the lighting field, the high candle power gas was gradually diminished and attention later on was given to heating value.

Much attention was also being given from the period 1890 to 1900 to the matter of gas for cooking and for heating water, and since the gas business entered this field its growth has been almost phenomenal.

After 1900 the use of gas for heating was somewhat limited, but gradually this use became more and more important. Room heaters came into general use for supplementing heating with coal. After 1915 house-heating exclusively by gas was first introduced in Baltimore, and today upwards of 1,400 houses are heated by gas.



**An Old Baltimore Gas Bill—**

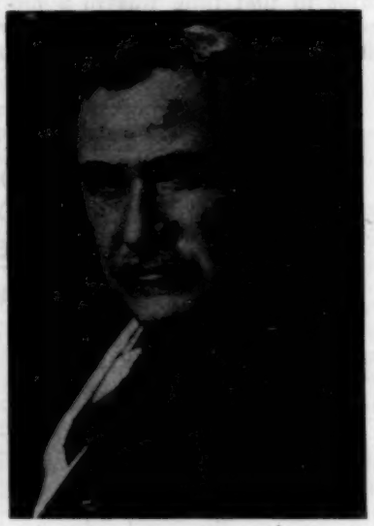
**November, 1829, to April 1, 1830. Gas was billed by the quarter and by the size of the burner used. Charge is made for "Second-hand Fan Burner," and for "One Quarter's Gas." Present maximum price of gas 92c. per thousand cubic feet in Baltimore.**

### Industrial Uses Advanced

Shortly before this time the industrial uses of gas were being pushed and many manufacturers were using large quantities of gas in a wholesale way. Then the war came on and manufacturers doing government work were served with gas in unheard of quantities for single consumers. This use of gas together with all the other purposes for which it was then being used, and the scarcity of domestic fuel accompanied by the unprecedented cold weather, produced in six years a doubling of the output of gas, something that had taken ten years to accomplish immediately before that time.

The Chart may be divided into periods as follows:

**1836 to 1876**—Practically all gas was used for lighting exclusively, and the increase in output during these forty years was about 515 million cubic feet, an amount equivalent to about seventeen days' output at the present time.



**GEORGE BEADENKOPF**

**Spring Garden Gas Plant**

**1876 to 1890**—Gas for cooking coming to the front, electric lighting starting and growing, and the Welsbach light, its great competitor at that time, also coming into vogue, the high candle power of gas was gradually being lowered. The gas output during this period of fourteen years increased about 827 million cubic feet, an amount equivalent to about twenty-seven days output today.

**1890 to 1900**—Gas for cooking and water heating being pushed more extensively and some gas heating by heaters was coming into vogue. During this period of ten years the gas output increased about 326 million cubic feet, an amount equal to about ten days' output today.

**1900 to 1923**—Use of gas being pushed for industrial purposes—for cooking, water heating and for heating of houses, and during this period with the extensive use of gas for the war industries, the growth of the output of gas has surpassed all previous records. During this period of twenty-three years the output increased about 7,912 million cubic feet, equivalent to fifteen times the growth during the forty years from 1836 to 1876.

During all these years, in keeping with the increasing output of gas, the price of gas to the consumer has fallen from $4 to 92 cents per thousand, the maximum rate charged in Baltimore today, and is being supplied to Baltimore at a price lower than that of any city on the Eastern Seaboard, and with a service which is unsurpassed.

# House Heating and Water Heating as a Combined Load*

## Hooking Up the Two in a Year Round Business

By N. T. SELLMAN, Service Engineer, A. G. A.

In several large cities which are supplied with manufactured gas considerable progress has been made in extending the use of this gas for house heating purposes. In New York, Baltimore, St. Louis and Denver the application of both steam and hot water boilers has established the central gas-fired house heating systems as the most automatic of all heating devices. In Portland, Ore., the same may be said of hot air heating with manufactured gas as the fuel. The work of establishing gas-fired central heating systems on a secure basis in these cities has been accomplished under a big range of fuel cost. Naturally, it was a very easy matter to popularize the use of gas in such localities where gas sold for slightly under 50 cents per thousand cubic feet, while in New York City, where gas was selling for a short period at $1.50 per thousand cubic feet, it was quite another problem. In reviewing the varied conditions under which gas has been established as an ideal house heating fuel, it shows conclusively that service and comfort count for more than an increase in operating cost. The successful installation of house heating boilers using manufactured gas was first made less than ten years ago. Today there are thousands of such boilers in use and the industry is supplied through no less than a dozen or more manufacturers with boilers designed specifically for gas.

So far I have been very specific in always referring to manufactured gas. This is due to the fact that gas fuel was used with more or less success in the natural gas fields for years before it was successfully applied to the manufactured gas industry. When, however, the first attempts were made to do house heating on the higher priced manufactured gas, it was not possible to install the same appliance that had been used in the natural gas fields. Neither was it possible to establish this business by inserting burners into the fire box of coal boilers, which had also been the practice in the natural gas fields. In most communities where natural gas is available the price has advanced so that it is now common practice, even in these sections, to install properly designed gas equipment.

The following facts are taken from the house heating situation as it exists in Portland, Ore., and shows the extent to which they have developed this field.

For the twelve months ending March, 1922, 478,000,000 cu. ft. of gas were used in Portland for house heating, representing about 18 per cent of the total amount of gas used for all purposes. Eight hundred of the 6,200 heating accounts represent cases where an entire house is heated by gas. The balance are cases where gas heating is auxiliary to solid fuel, radiant fires, floor furnaces, and space heaters being used. It is estimated that the 800 houses entirely heated by gas represent 25 per cent of the total house heating consumption. Out of the 800 installations where house heating is supplied through a central heating system, all but 50 are equipped with hot air furnaces. The remaining 50 are mostly hot water with a few steam boilers. The fact that I wish to bring out in this case is that even with a large number of central house heating installations, namely 800, it is remarkable to find that these only represent 25 per cent of the total amount of gas used for heating purposes. It, therefore, brings out the fact that many gas men are very inconsistent concerning the subject of house heating when they refuse to entertain the idea of securing central house heating, whereas they are perfectly willing to sell all types and as many space heaters as possible.

The central house heating boiler produces a much better load. It is one which can be figured on more accurately in advance, as to what may be expected, and I, therefore, feel that any gas company that is willing to exploit space heaters to any extent has no excuse for not trying to secure all the central house heating that they possibly can.

As is generally known, there is considerable opposition on the part of many gas companies toward the subject of house heating. In some cases this may be warranted because of lack of plant capacity and the officers do not feel that the load resulting from house heating warrants adding to the plant. In order that we may decide more intelligently whether this is a fact or not, I think that an analysis of just what kind of a load house heating produces will be of value.

Let us assume a house with 500 sq. ft. of steam radiation, the approximate gas consumption of this installation for the entire heating season will be approximately 550,000 cu. ft. The load itself will be distributed approximately month by month as follows:

| | | |
|---|---|---|
| October | 22,000 | 4% |
| November | 66,000 | 12% |
| December | 104,500 | 19% |
| January | 126,500 | 23% |
| February | 115,500 | 21% |
| March | 77,444 | 14% |
| April | 38,500 | 7% |

The day of maximum demand will naturally be when the weather approaches zero or slightly under. The gas consumption in this case should be approximately 6,000 cu. ft. for the day. This is, therefore, the peak load for this installation and the fact that interests us, therefore, is that we may use 6,000 cu. ft. of gas on an installation where the total year's sales is going to be approximately 550,000 cu. ft.

Thus we have to supply approximately 1/90th of the gas in one day that we are going to sell for the

*Paper read before midyear meeting of Pennsylvania Gas Association.

entire year. In order to see just what this means we can compare it with the actual load of several gas companies as they exist at present. I, therefore, obtained this same ratio from several companies in the State of Pennsylvania, and found that it was not uncommon for a gas company to have a maximum day's demand so high that 1/200th of the gas had to be supplied in one day as compared with the total year's sales. Naturally the more nearly this ratio approaches 1/365, which would mean that the daily send-out was uniform for every day, the better it would be for the company.

### Combining Two Loads

The one thing that we can combine with house heating to improve this ratio would be water heating for the summer months. To show what the effect of combining house heating and summer water heating would be, I will assume a case where we install a boiler of the same size as required in the original assumption for house heating, that is, we will assume a boiler of the same size as required for the house having 500 sq. ft. of radiation and that this boiler is just the correct size for a storage water heating installation. The consumption per month for this boiler will be in the proximity of 160,000 cu. ft. per month, and in most cases where boilers are installed under these conditions, they will be in full operation five months. In other words, they will be used in the months when the large coal house heating boilers are not in operation. The ratio of the maximum day's demand for the total consumption that will be secured from this installation is 1/150th, but by combining this load with the house heating load we get the very attractive ratio of 1/250th. Thus by combining house heating and summer water heating we actually secure a load which is even better than the loads as they exist for most gas companies. The water heating installation which I have assumed would be equivalent to twenty average homes, a sixty room hotel, a restaurant serving a thousand meals a day, or an office building ten stories high with a floor area of 100x100.

Any of these cases will yield a consumption required to offset the house heating installation of 500 sq. ft. of steam radiation. Every city has its hotels, restaurants and office buildings, where the hot water is made by the same apparatus that does the heating during the winter months, and where this equipment is then of necessity operated inefficiently under light summer loads. Auxiliary gas apparatus is the ideal equipment to take care of this summer water heating and every effort should be made to secure it. The competition with coal in this case is much more favorable than it is for house heating. The house heating installation which we assumed of namely 500 sq. ft. of steam radiation and where our approximate gas consumption for the season will be 550,000 cu. ft. competes with approximately 15 tons of coal per year. The water heater installation, however, which will yield 160,000 cu. ft. of gas per month, competes with about six tons of coal per month. This is of course on the assumption that the coal equipment consists of a boiler which is used in the winter time for house heating and water heating, and in the summer time for water heating only.

### Most Easily Controlled Fuel

The characteristics of gas make it the most easily controllable of all fuels and it is therefore a mistake not to take full advantage of this fact when designing or installing gas heating equipment. Every central gas fired heating plant should be thermostatically controlled. Temperature control as used in conjunction with gas boilers means uniform comfort, minimum attention and high efficiency. It has been the writer's observation that where temperature control is used the gas consumption is so proportional to the outside temperature that it is possible to estimate the gas consumption for any given condition to a nicety. It is possible to tell a consumer in advance what his gas consumption will approximate month by month as well as for the entire heating season. When no control is used this is absolutely impossible and all the other outstanding good features of gas heating are, as well, more or less sacrificed. For private dwellings and small apartment houses one thermostat properly located has shown itself to be sufficient. The only precaution necessary in this case is that the thermostat be located on an inside wall in a space equipped with the correct amount of radiation and that the space is in all respects representative of the average conditions throughout the house. In private dwellings this has, as a rule, been found to be an inner wall in the living room. If the building houses several families or is put to a varied number of uses, single thermostatic control is not satisfactory, and it is then necessary to use individual room control.

The following describes briefly what should constitute a complete gas-fired steam heating plant:

The first consideration is that the boiler should be one designed for gas, which means that the burner equipment should be capable of functioning from full load to no load under automatic control without any burner troubles. In instances where the gas pressure may vary more than 50%, better operation will result with the use of a pressure regulating gas governor. In addition to all the customary steam boiler accessories, there should be a steam pressure regulating governor which automatically turns the gas on and off and thus maintains a predetermined steam pressure within a small variation. The thermostat should work either on the same valve as the automatic steam pressure regulator or else on a separate snap-acting gas valve. Recently a few manufacturers of steam boilers have added an automatic low water fuel cutoff. This operates so that the gas is automatically shut off should the water go below a safe level in the boiler and in turn reopening the gas valve in the event that the water returns to the boiler. In the case of hot water boilers, a thermostat is placed in the hot water riser and thus automatically maintains a predetermined circulating temperature. This replaces the automatic steam pressure regulator used on steam boilers. This thermostat is used in addition to the regular room heating thermostat which is so strongly recommended for all gas-fired heating boilers. The remainder of the equipment used for hot water boilers is similar to all hot water heating equipment.

### Valuable Factors

For the purpose of estimating what the gas consumption should be on any given installation, the following factors are valuable:

For steam installations the consumption will be approximately 1,100 cu. ft. of gas per sq. ft. of radiation for the heating season.

For hot water installations the consumption will be approximately 550 cu. ft. of gas per sq. ft. of radiation per heating season.

It will be noted from these figures that hot water installations are considerably more efficient than steam. This is accounted for by the fact that the working temperature of a hot water boiler is lower than that of a steam boiler and then again, the thermostat, which should always be located in the hot water riser on the hot water boiler, gives us better control in this case. The boiler size to be selected for installation where thermostatic control is to be used should be installed sq. ft. of radiation plus 25 per cent for quick heating. If no thermostatic control is used the boiler should be rated at twice the total sq. ft. of steam radiation installed. These two different methods of figuring have proven very satisfactory and fortunately the saving in the boiler size by using thermostatic control practically pays for the thermostat and its installation. The saving in gas consumption, which will follow from the use of a thermostat will be considerable, but one which can never be estimated. In fact, the gas consumption on installations where no thermostatic control is supplied varies entirely with the amount of attention the boiler is given and in some cases that have come to my attention, the gas consumption has been more than double that ever found on an installation of equal size equipped with control.

### Figuring Daily Gas Consumption

In order to figure the daily gas consumption for any given temperature the following factor can be used: .2 of a cu. ft. of gas per sq. ft. of radiation per degree of heating.

By degree of heating is meant the difference between the outside temperature and 65 degrees. Some pople may raise the question of why 65 degrees is used in this case when we actually heat the rooms to 70 degrees. The reason for this is that the temperature as reported by the weather bureau is an average for the 24 hours and the average temperature maintained inside a house for 24 hours, when we include night temperature, is nearer to 65 than it is to 70 degrees. To prove this, if we take the daily consumption for any installation and plot this against the outside temperature, we find that zero consumption occurs when the outside temperature is 65 degrees. These figures will be found useful in checking high bill complaints and in adjusting an installation when first installed.

### Must Know Appliances

In order to enter the house heating and large volume water heating business on a lasting basis, it is very essential that we familiarize ourselves with every detail pertaining to the appliances that are to be used in this work. We should know the exact rating that boilers will yield on our local gas. This can only be determined by actual test or by making trial installations. In either case be sure that the rating was not determined under conditions that were more favorable than those which will usually be encountered. This warning refers mainly to gas pressure and flue connections, as it is evident that we will not get the best possible output from a boiler where the gas pressure is below normal and where the flue may occasionally be subject to backdraft. It is, therefore, safest to rate all boilers at a gas pressure that is sure to be available at all points on our distribution system and also to be sure that no flue connection is used during this rating test.

Once having determined a conservative rating, we are in a position to estimate more accurately without any fear that some unforeseen condition will cause the equipment to fall short of performing the necessary work. For the purpose of estimating there is sufficient data available for accurate computations of both house heating and water heating prospects. Reports issued by the weather bureau should be consulted in order to determine what your local maximum temperature range below room temperature may be. For this section of the country this is usually figured as 70 degrees, which means that 0 degrees Fahrenheit is the lowest outside temperature at which the heating plant will be able to maintain 70 degrees inside temperature.

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## Gas Less Than One Cent Out of Dollar

A striking statement of the low proportionate cost of public utility service in the household budget of the average family was recently made by Albert Stump, an Indianapolis lawyer, in an address before Indiana business men and organizations.

"The average family's income, as shown by investigations and data collected in the Home Economics Department of a large university, is spent in the following proportions:

| | Per Ct. | | Per Ct. |
|---|---|---|---|
| Food | 26.8 | Rent and Fuel | 22.9 |
| Clothes | 15.3 | Insurance | 4.4 |
| Miscellaneous (including vacations, entertainments, gifts and savings) | 24.1 | Street car fare | 2.9 |
| | | Water | 1.2 |
| | | Telephone | .8 |
| Gas | .9 | | |
| Electricity | .7 | | |

"Which totals 100 per cent of the income.

"The cost of all the utility service together amounts to only 6.5 per cent of the income. A further statement within the facts of the case should be made here, and that is that the rates for utility service have increased about 25 per cent on the average during the last six years, while the increase for every other commodity has averaged from 50 per cent to 100 per cent."

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## Analyses of Alabama Coals

In preparation for a report on analyses and characteristics of Alabama coals, field representatives of the United States Bureau of Mines have taken 376 coal samples from 79 mines in that State.

## New Apparatus for Collecting Gas Samples

Translated from the German article, appearing in Das Gas und Wasserfach, 1922, page 218.

(There are two instruments described in this article. Both have been used in gas plants in Germany and have proved to be entirely satisfactory. We are reproducing this article in the AMERICAN GAS JOURNAL to enable our readers to see what the latest developments along these lines are in European countries. The instruments appear to have certain peculiar advantages which recommend them for certain definite purposes.—Translators' note.)

In figure 1 there is shown a device in diagrammatic form, which is particularly useful in the collection of samples of mixed gas. It is claimed for this instrument that it will give an average sample of the gas produced over a period of operation of the gas producer which may last many hours. The taking of the sample during this time is continuous. The gas collecting vessels A and the taller vessel B, which is located between the former, are connected through tubing R. Consequently they form connecting vessels filled with water. In B there is a float C. Attached to C there is a rod D, which serves to move the float up and down in the vessel B and which is loaded with a weight. Another rod E is connected to the rod D. The rod E is connected at its lower end with the outlet of F, which is a rubber tube F branching off from R and through which the water runs off from A and B. While this is taking place gas is sucked into the vessels A.

The rate of flow of the water through the outlet F and consequently the period during which the gas sample is being collected are regulated by means of a cock. The effective difference in levels, shown as H in the diagram, is maintained constant throughout the process of gas sampling by means of the positive connection between the end of the tube F and the float C. This is an important feature of the apparatus, as through it a uniform average sample of the gas is obtained, inasmuch as the rate of flow of the gas into the apparatus always remains constant, provided that the pressure at the point where the gas is being withdrawn from the line remains fairly constant. The possible variation in the gas pressure is of course the main difficulty in obtaining average samples of gas by a continuous process.

The second apparatus is shown in figure 2. This form of apparatus is especially well adapted to taking sample of gas in wells and shafts. The whole apparatus can be lowered into the well by means of a rope. The apparatus consists essentially of the gas collector A, which is held by means of supports on the float B. A weight, which is attached to the float and hangs down below it, assures the apparatus always remaining in an upright position. The two valves of the vessel A are connected together by a positive working connection, so that they both will always be in the same position with respect to one another. The figure also shows that the opening of the valves is effected as soon as the small float C strikes the surface of the water. This is effected by means of the connections between this float and the levers which operate the valves or cocks. The vessel A, which has been filled with water beforehand, is emptied and fills with gas, as the latter is sucked in.

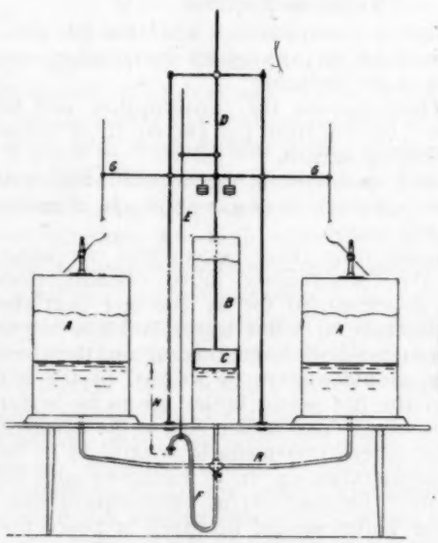


Fig. 1

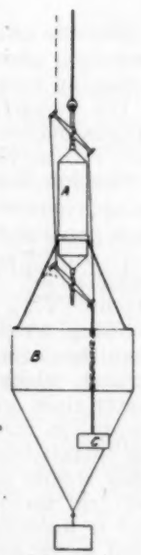


Fig. 2

When the apparatus is lifted up, the float C no longer rests on the surface of the water and the weight of the same causes the cocks to close, so that the gas sample is securely entrapped within the vessel A.

Another method of working the cocks is to weight one side of the lever of the lower cock, and to attach the rope carrying the whole apparatus to the same side of the upper cock-lever. Now when the float B touches the water surface, the rope becomes slack and the weight on the lever of the lower cock opens both valves. As the rope is pulled up, the valves are closed again as in the other case. This method of construction is shown in the figure in dotted lines. The float C need not be used, and the apparatus instead of hanging from the rope at the center is now hung at the end of the lever on one side.

## Government Seeks Cleaner Anthracite

Washington, D. C.—The following letter, relative to the necessity for the cleaner preparation of anthracite produced at certain smaller mines, has been addressed by Federal Fuel Distributor C. E. Spans to the Pennsylvania Fuel Commission.

"Complaints are reaching this office of the character of anthracite that is being loaded at and shipped from some of the smaller operations. It is claimed that in many instances the coal contains dirt, large quantities of slate, etc. This kind of work will have to cease.

"The prices that you have fixed at all the mines, of course, contemplate that anthracite shall be shipped, and not a mixture of coal with foreign substances. Due to cost of production, the prices on anthracite are high, particularly on some of the so-called "independent" coal; but on basis of these prices, the people are certainly entitled to receive what they are paying for.

"Undoubtedly, similar complaints have reached you directly, and, if so, you are, of course, familiar with the situation and, I presume, are investigating the matter in such a way that we may anticipate the elimination of cause for further complaint."

# As the Journal Views It

## Christmas 1922

As Christmas 1922 greets us we find that the year has indeed been one that makes us glad to be able to celebrate this day of days. There has been a great advance made not only by the nation but by the world as well. Despite the many cares and troubles that have been encountered during the year since last we honored the Great Teacher's birthday, there has been marked advancement made and a new understanding has come to the nations of the world.

In the gas industry the year has been marked by splendid progress and there has come a new understanding by the public which it is our honor to serve, of the problems that encompass us. The year that has gone has seen tremendous strides forward and there is promise of even more marked improvement in the days that are to come. To all in the gas industry there will be greater opportunities to serve and the rewards will be commensurate with the efforts that we make. We can look back on a work well done and rejoice that it has been given to us to be of real service to mankind.

To its readers the AMERICAN GAS JOURNAL desires to extend its wishes for a full measure of the Christmas cheer that everyone in the industry so richly deserves.

Merry Christmas to you all!

## Pride in the Gas Industry

Every person in the gas industry has a pride in his work that is well justified by the accomplishments of the field. That is the reason why there is deep resentment felt when we are accused of not being proud of the work that the gas fraternity is doing. Naturally the accusation is made by some one who is not familiar with the gas business for those who are in close touch with it know of the many sacrifices that men in this field have to make in order that the service we render may be uninterrupted. Certainly there is no greater reward that can come to this field than the pride of real accomplishment.

Pride? Yes, gasmen have pride, but it is not the boastful kind. Rather it is the pride of doing things for the public and bringing comfort to those we serve.

What other business is there wherein its men are on the job twenty-four hours each day? What other business is there wherein the manager after closing up his desk in his office frequently spends hours at his plant working over problems of service that at times seem to be beyond solution?

Working in the gas industry is not a matter of watching the clock. It can't be. When others are at their homes or some place of amusement, the gasman is at his plant or out on the district guarding the lives and well-being of the community. It must be pride that keeps up the courage of these men who labor thus and arduously.

Perhaps by lack of pride is meant a lack of boastfulness. Perhaps our critic means that we should shout from the housetops of our accomplishments in this direction. But we do not believe that such a course would be wise. What could be gained? That would simply be vain boasting and that would soon become tiresome. There is no educational value in telling of what we have done or making great promises that are impossible of fulfillment. Soon the public would become tired of hearing of this and we would be outcasts and without real friends. People would shun us exactly as they shun others who tell of being great and who try to magnify to the world their importance. It becomes an old story when twice told.

Pride? Yes, every man in the industry is proud of his job and his work, and unless he is, there is no place for him. But likewise the gas industry has no place for a boaster. Let us show our pride in our accomplishments and not by talking about them.

## The Right Kind of Address

We want to call attention of our readers to the speech made by Charles Otten, Jr., Manager of the Plymouth Gas Company, before the local Chamber of Commerce. This will be found on another page of this issue under the title "Tells Public of Gas Company Management." Mr. Otten, in his address, told his facts in such an interesting manner that, we are informed, his audience was held right from the start. The speech attracted so much notice that a local daily newspaper featured it on its front page in scarehead type.

## Naphthalene Gas

Naphthalene when deposited in its solid state in gas works apparatus and gas mains is often a source of trouble sometimes entirely blocking the passage of the gas and entailing much labor and expense to remove it.

One of the most efficient methods of eliminating naphthalene troubles is to mechanically vaporize paraffin and mix it with the gas as it enters the holders in the proportion of about 5 to 12 gallons of oil per million c. f. of gas passing. The best position

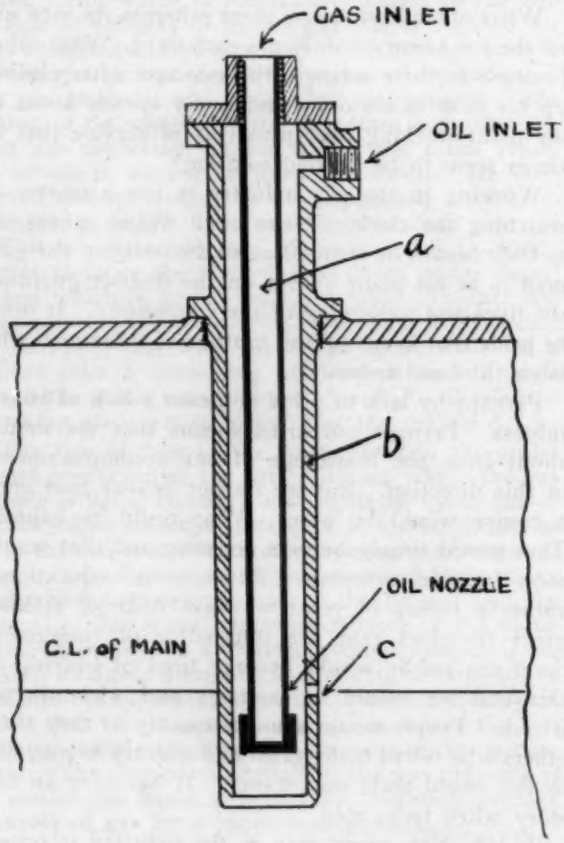
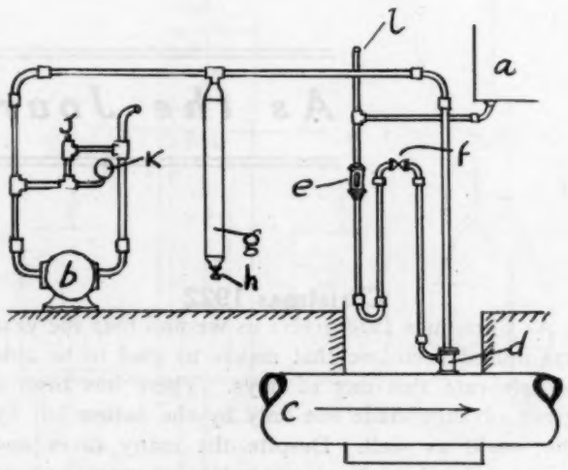



Fig 1

for the sprayer is on the inlet to the holders, because, owing to the large area of a holder, temperature changes are very marked, and naphthalene is deposited therein. This deposit is then carried out to the district, whereas if the gas is impregnated with paraffin before it reaches the holder, this is prevented. When the sprayer is fixed in this position traces of paraffin have been found in the services as much as five miles away from the works, proving that the condensation does not take place in the holder and that the paraffin is effectively atomized.

The spray should be fixed in the straight run of main as far from the holder as is convenient with the spraying hole towards the holder, permitting the spray to travel in the same direction as the gas. This allows the atomized paraffin to become intimately mixed with the gas before it reaches the holder. This type of sprayer has an advantage over the steam vaporizing method in that the finely divided paraffin does not condense in the mains, the spray being driven into the main under pressure intimately mixes with the gas, which is not the case when heated vapor enters the main under a pressure very little greater than that of the gas in the main. Trouble from water and steam so detrimental to the leathers in dry meters is also overcome, while the plant has the advantage of being cheap in first cost, cheap to operate and, above all, simple.




**REFERENCE.**

a. Oil tank.
b. Compressor.
c. Gas main.
d. Sprayer.
e. Sight feed.
f. Cock.
g. Water collecting pipe.
h. Drain cock.
j. Excess pressure valve.
k. Pressure gauge.
l. Air vent.

The compressor may be fixed in any convenient place, such as the exhauster room, and a pipe run to the sprayer, the latter being placed at any convenient distance away. Fig. 1 shows the sprayer which is inserted in the gas mains. The inner tube *a* is supplied with gas at 25 pounds pressure, the outer one *b* containing the paraffin to be vaporized, a small hole is drilled in *a* so as to be central in the main and a larger hole *c* is drilled in *b* so as to be be exactly opposite to it. The high pressure gas issuing from the small hole sprays oil through *c* into the main in which the apparatus is fixed. The high pressure gas necessary can be supplied by any suitable form of compressor; the minimum pressure should not fall below 25 pounds, 30 to 40 pounds being preferable.

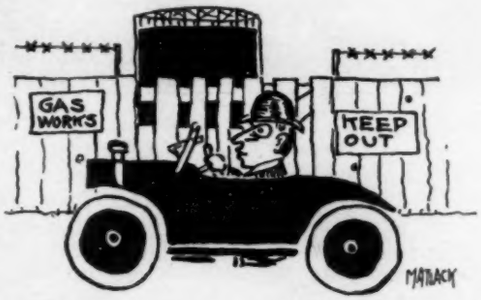
The general arrangement of such a plant is shown in Fig. 2, from which it will be seen that the whole affair is quite simple and is one which has proved highly effective in some fifty large plants in England.

[Note: This method is being used successfully by the South Metropolitan Gas Company, London, England.]

MAJOR F. JOHNSTONE TAYLOR.

## The Superintendent Sells the Works

Not so long ago the City Engineer of one of the Middle Western cities, while driving about town, ran into a little trouble right at the gates of the gas works. His engine coughed and sputtered a moment, then all was calm and still, the horizon became fixed, his engine failed to respond. The engineer jerked this lever and that, stepped on her, spoke a few words to the starting system, swore at the ignition and hopped out of his hack, examined this, that and the other—and finally found that he had run out of gas, eighteen blocks from a filling station and five from a 'phone.




**The City Engineer Drove His Own Car**

Having taken these facts into consideration and decided that it was up to him to hoof it back to the 'phone he started off. Just at this moment the superintendent of the gas works hove in sight. Seeing that the engineer was having trouble, he stopped to lend a hand. Upon learning that the trouble was caused by a Volsteaded gas tank, invited the engineer to get into his car and run back to the gas works garage, where a supply of the liquid power could be had.

As they drew up at the works office the engineer gazed about and said, "Why, you have quite a place here; I had no idea there was so much to it."

Whereupon the superintendent suggested that if the engineer had a few moments to spare he would be mighty glad to show him about, which he did, with the result that the engineer left with an entirely new idea of a gas works, the amount of capital required to build one and the number of men required to operate it; in short, he went away a "changed man," with a better understanding of what had been expended in money and materials and what was required in men and materials to render and maintain good public service.

This engineer is not unlike thousands of other Americans who use and complain about public service every day: "They have no idea there is so much to it." This, however, is no fault of the people; it is the fault of the company. Folks will be interested in the public service company if the public service company will give them a chance. Public relations have in the past been originated from the outside.

In the future "public relations" will be given much more thought by those within the organization and plans will be formulated whereby the man in charge of the public relations department will see that not only is a policy of just public relations framed, but that it is carried out by the organization from office boy up.

The company will realize that the personal equation is vital to its public relations and this factor will be given due cognizance in selecting and promoting employees, for all departments. Even the "powers that be" will weigh very, very carefully the personalities of the men who are to direct public service organizations, for after all is not employee interest, courtesy or initiative but a direct reflection of interest, courtesy or initiative of the men "higher up"?

"Let's go" at this thing of better public relations with an open mind; let's bury precedent, put "welcome" on the mat and try to be real human beings. Once we get feeling that way and get folks interested—why it will not be long until folks will know we are in earnest, doing our best, and they will be with us. First impressions should be well made. Sell your works to the "booster organization" in your town.

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## Suggests That Coal Be Stored Under Ground

A matter of import to the gas industry is contained in the suggestion of Director H. Foster Bain, of the U. S. Bureau of Mines, for the storage of coal underground at the mines, as a practical step toward the accumulation of those reserves of fuel which are necessary to stabilize industry and to protect the domestic consumer in periods of acute coal shortage, such as the country has recently undergone, and which again threatens.

The seasonal demand for coal can to some extent be met by storage, but this must be done by the consumer or by some distributing agent operating between him and the mine, is the gist of a report just made by Dr. Bain to the United States Coal Commission. At the mines, he contends, the best place to store coal is in the ground and, with unimportant exceptions, it is not feasible to provide more than a limited amount of storage above ground.

The anthracite companies have established near points of consumption a system of great storage piles which were valuable balance wheels to the trade and have facilitated that steadiness of operation which distinguishes anthracite from bituminous mining. Large-scale storage of bituminous coal has been less practicable because the uncertainty as to future price—a result of the excess capacity of the mines and the keen competition—has deterred companies and individuals from making the necessary investment. The same factors tend to discourage individual consumers from storing in summer coal that will not be burned till winter. In periods of advancing price or of anticipated shortage, however, as much as 60,000,000 tons of bituminous coal has actually gone into storage. This is enough under normal conditions to stabilize the industry and also to contradict effectively those who doubt the technical feasibility of storing soft coal.

With the proper selection of the coal and due attention to modest requirements as to methods, it is entirely practicable to store large quantities of most coal at moderate cost, contends Dr. Bain. The risk is in the uncertainties as to future price, as the mine and railway equipment of the country is extensive enough to allow industry, except under unusual

conditions, to obtain adequate supplies direct from the mines. Coal shortage and car shortage is a local matter in normal years. The nation has put men and money into coal mining and the railways to meet peak loads rather than provide a less amount of capital for coal storage and so insure steady and economical operation. The whole problem of coal storage has recently been reviewed by H. H. Stoek, consulting engineer to the Bureau of Mines, and a report is being prepared which will place the facts at the disposal of all persons interested.

The possibility of devising a use classification that will permit a wider pooling of coal is also suggested by Dr. Bain. "Such pooling would relieve the pressure on docks, terminals and railway equipment," he declares. Most users of coal lack facilities for selecting the grades best suited to their needs, and most coal is sold on its name or on the reputation of the operating company or local dealer. A good name is a valuable asset in business, and when one has been built up it should be preserved as a public benefit, but this should not be incompatible with the perfecting of some system whereby a buyer could be assured of getting on delivery a definite measure of predetermined value in his coal. A system that would justly penalize dirty coal and would assure each grade selling on its merit would be in the public interest. If such variable products as cotton, potatoes and wheat can be satisfactorily graded for delivery in the public markets, it would seem not too much to ask that a similar system be applied to coal. A basic difficulty is that of sampling and measuring without undue expense a commodity handled in such quantity. It is much more difficult to sample coal by hundreds of trainloads than to grade potatoes by the box or even the carload. In coal, too, there is the fundamental difficulty of the wide range in sizes as compared with grains of wheat or corn. Provisional systems have been worked out and are being regularly applied by the Bureau of Mines in supervising purchases of coal for the Federal fuel yard in Washington, the Isthmian Canal Commission and other government establishments. Much time and thought have been devoted to the subject and further studies are under way. The general desirability of simplifying the marketing and transportation of coal, and of establishing grades responsive to use, with further provision of effective and not too expensive methods of testing the coal flowing in commerce, is undoubted, and it is to this end that the Bureau of Mines is working.

"In the long run it is believed that as technical and economic conditions in the industry progressively improve, the social and labor conditions will largely care for themselves."

## Gas Water Heater in All Electrical Home

People standing in line (representative citizens, too), more arriving on foot and more in automobiles.

This is an almost universal picture in "Anytown," U. S. A., where various trade interests have combined their efforts to build and advertise the "Modern Home."

The Modern Home idea rivals the radio craze in popularity and the speed with which it has spread over the country.

The Atlanta Electrical Association, of Atlanta, Ga., has recently exhibited an Electrical Home and report an attendance of over 40,000 visitors. It was found necessary to postpone the closing date in order to accommodate all who desired to inspect it.

The Home, which cost $25,000, was built during July, August and September, and thrown open to the public on October 1.

I. H. MOREHEAD, Jr.,
Supt. of Retail Sales,
Georgia Railway &
Power Co.

It was agreed to put into the Home only the latest thing in electrical appliances. However, I. H. Morehead, Jr., of the Georgia Railway & Power Company, knew that the only really efficient and economical method of heating water was by gas, and it was due solely to his efforts that a Ruud gas water heater was installed in the Home.

For heating water, cooking, lighting, auxiliary heating, etc., gas is practical and economical, as every gas man knows. Therefore, why not a combination "Gas-Electric Home" exhibit, in which both the gas and electrical fraternities can join?

# Tells Public of Gas Company Management*

## Places Cards on Table Before Consumers

By CHARLES OTTEN, Jr., Manager Plymouth (Mass.), Gas Co.

I have not been able to find out much about the beginning of the Gas Company in Plymouth except that the present company was incorporated in 1853. My attention has been called to the fact that at one time in a history of early Plymouth it is reported that a gas company was then operating here. I have been unable to find out any more of the details, however.

I doubt if many people in Plymouth have ever visited our works or know much about the amount of money invested here. The land occupied is not very extensive but the buildings are well placed so as to form a very compact and convenient layout. I regret greatly that so many people got the impression a few years ago that the present plant could not be put into condition to give good service. It is really a very excellent plant and gas men who come to visit me always remark about its good qualities. Most of the buildings are brick and the entire property is surrounded with a concrete wall six feet high. It is very easy for a plant of this sort to get so it looks disreputable and I constantly urge everybody to do their part, so the place looks as if somebody owned it. When we get in a little better financial shape and feel free to spend a little money for painting, it will look still better. The most of the land, buildings and apparatus at the works amounts to over $140,000. This does not include the street system or meters.

### The Coal Gas Plant

The coal gas plant consists of four benches as they are called. The benches are built of brick on a solid foundation and at our works it was necessary to put in piling on account of the quicksand. Each bench consists of an arch, about 9 feet wide and about 16 feet high and 10 feet from front to back. In the bottom part of the arch and below the floor of the retort house a producer furnace is built and above the furnace the retorts are set with an arrangement of flues that carry the gases from the furnace around the retorts and so heat the retorts.

The back of the retort is closed, and the front is fitted with a cast iron mouthpiece which has a door and from which a pipe carries the gas away. After the retorts are heated and the coal has been charged into the retorts, the mouthpiece door is closed, and the gas passes up the standpipe to the hydraulic main. An exhauster or "gas pump" takes the gases away from the main and pumps it through a scrubber, and tar extractor to take out the ammonia and tar, and then pumps the gas through the purifiers. The purifiers are iron boxes filled with wood shaving that have been coated with iron borings and then the borings allowed to rust. This material is called oxide, and the gas is pumped through several boxes and this removes the sulphur from the gas. The gas then passes through a very large gas meter and then into the storage holder. The reason for going to the great expense of buying a large meter and then spending good money to keep it in good working order, is to find out at least every day just how much gas is being made and what efficiency we are getting at the works. The charges of coal into the retorts are all weighed, and knowing how much gas is made from a certain amount of coal, we can tell every day at least and every hour if desired whether we are doing as well as we should. The amount of gas obtained from each pound of coal varies according to the kind of coal used, and is between 4 and 5 1-2 cu. ft. of gas from each pound of coal. After the coal has been in the retorts for six or eight hours, the gas has been all extracted, and what is left in the retorts is then drawn out with long handled iron hoes and this is coke. Coke is an ideal fuel for use in house heating, boilers, and in large bake ovens. When the coke is drawn out of the retorts it is red hot and some of this hot coke is charged into the producer furnace to maintain the heat in the retorts, and the rest is quenched, and taken to the coke pile.

### Storage Capacity.

The gas storage holders which we have in Plymouth, have sufficient capacity to hold almost as much gas as the largest amount we send out in one day. This is not always the case with gas companies, as holders are very costly. This stored up gas assures the customers an uninterrupted supply of gas, and enables us to operate the benches at a uniform rate, thus getting a higher efficiency.

During the past year, I have installed at the works an oil gas plant and we have been making 50 per cent coal gas and 50 per cent oil gas. This installation has enabled us to make quite a nice saving in the cost of operations, and also makes the operation of the plant a little more flexible. The oil gas is made from a petroleum distillate called gas oil. This gas oil is sprayed into cast steel retorts which have been heated to 1500 degrees and this heat gasifies the oil. After the gas has been cooled and had the tar removed, it is stored in a separate holder from which it is taken as needed and mixed with the coal gas, and then the combined gases are stored in another holder from which they pass out through the mains, services and meters to the customer.

### Accuracy of Meters

The meter is probably the most interesting part of the distribution system, and is really so remarkably accurate that it is difficult to realize it. In spite of the fact that a gas meter will do its duty of measuring the gas used through it for seven, eight or even more years, and still be within a few per cent of cor-

*This speech was delivered as part of exercises held by Chamber of Commerce to commemorate Old Colony Memorial. To our way of thinking it is a splendid good will builder.—Editor.

rect, it is blamed many times for unusual increase in the gas consumption that is forgotten by the time the bill comes in. A gas meter is a positive measuring device and all the gas actually passes through the meter and there is no way in which the meter can register except when gas is passing. I have a slide showing the construction of a meter and when this is shown a little later on you will understand the operation quite easily. Of course, it is possible to make an error in writing down the reading but if this were done it would automatically correct itself on the next bill, as the reading from one month's bill is carried forward to the next.

Now we come to the part that has a great deal to do in determining whether the service we are trying to render our customers will be satisfactory or not. Up to this point everything has been under the company's control and the matter of correcting any difficulties was one that the gas company could get right after, and as fast as possible correct them.

If the works were not properly built or operated it was entirely up to the management to correct and this has been done. If the mains and services were faulty, this also the gas company management must correct alone, excepting possibly that part of the service pipes on the customers property. If the meters were set in such a manner that they obstructed the flow of gas this also the company must promptly remedy. All these things having been properly attended to, the customers should be willing to co-operate with the company in getting good gas appliances for all the work done, and money spent will go for naught if the appliances in which the gas is to be used are not in good working order. By this, I do not mean that everybody should buy new appliances but that such appliances as are not properly built or are worn out should be replaced. This is really to the customers advantage, for he will get real value for his money, not only in the case of the actual appliance he purchases but also the gas service which he buys when he pays his gas bill. We have made much progress this year along this line and it is already resulting in a better opinion of the value of gas service. I hope you will believe me when I tell you that I am not trying to sell you other appliances for the sake of any profit in this merchandise transaction. As a matter of fact we do not make any real profit at this time for we are doing so much in the way of correcting faulty piping conditions to the appliances we install, that it actually leaves us a small loss. It certainly is the hardest job I am now tackling and I assure you if it were not absolutely necessary that the old appliances be replaced, I would not press the point.

### The Question of Rates.

The next part of our discussion is a topic I do not know just how to lead up to, so we better just jump at it with both feet. It is the subject of the rate for our service. Where we have been able to get in proper appliances, and the customer will give some thought to their use, and plan the work wisely we have no difficulty in keeping the customer thoroughly satisfied. It is very easy in Plymouth to do all the cooking and water heating with gas and at a cost that will compare very favorably with any other means. In my own home and in many others in town all this work is done by gas, and the customers are entirely satisfied with the cost and service. I have been in cities where we were selling gas as low as 80c. per 1,000 cu. ft. and even then customers would claim they were being robbed. It is entirely a matter of a little care and we can and will do most anything for our customers, but it is utterly impossible for us to come around and shut off your gas burners when they are left burning too long or turn them down when they are burning too high. If it were possible, I would gladly have this done for the customers.

### Public Without Confidence in Company

I came to Plymouth in April, 1919, and while I found the plant in good enough condition, the service seemed to be unsatisfactory, the company had no friends and did not have your confidence. The cost of operating was high and the labor situation at the plant was very unstable. The men demanded more help for the same work and increased pay. It was at a time when labor was dictating its own terms but I felt that the greatest reason for their attitude was that the men did not know me, and were going to do me first as they probably felt sure I would do them if they did not get the upper hand. This condition could possibly have been corrected by getting all new men but the old men lived in Plymouth and I had never found it necessary to clean out an organization and did not want to do it here. After we got to know each other better their attitude gradually changed and today we get along beautifully, and the company gets a fair day's work for a fair day's pay and I feel there is no more loyal group of men than the employees of my company. Not only loyal to the company but loyal to each other and the customers we serve.

There is probably nothing to be gained by going back over the costs at that time. They were high and there was nothing I could do to reduce them at once. Our rate had been set by the commission at $2.75 per 1000 cu. ft. and while this seemed high as compared with old rates, our income was less than our expenses by many thousands of dollars. This has been the story right along up to this year but we now see daylight ahead and I have every reason to believe that the future will work out as I planned it should, i. e., that the company may be prosperous and our service as good or better than in other places and the gas rate reasonable.

### Financial Condition Better

On November 1, this year, we were $8,800 better off than at the same time last year, and this in spite of the fact that due to the pageant last year our gas sales were greater than they were this year. This improvement is almost entirely due to economies that have been made by changes in plant operation.

On November 1, last year, we were $8,400 short of earning our out of pocket expenses while this year for the same ten months we have $400 over. This balance of course is not sufficient to put the com-

pany in a sound position but it is such a big step in the right direction that I cannot help but feel we will gradually pull out of the hole. The total deficit today is still large but a start having been made in reducing it we have great hopes.

### Sliding Scale Rate

Our present gas rate is a sliding scale, and starts off with a much higher rate for the first 100 cu. ft. than for subsequent ones. The first 1000 cu. ft. each month costs $2.75 net, which is the same as the old rate but everything above 1000 cu. ft. is only $2 per 1000 cu. ft. which made a reduction of 75c. This schedule was designed in this way as it more nearly followed the cost curve and also offered inducements to customers to do more work with gas and so get the reduction in rate. The average consumption in Plymouth always was below what it should be, and the adoption of this schedule helped to start an increase in the average consumption. Our costs have now been cut to the bone, and any further reductions in our price will come as the cost of coal decreases and the use of gas per customer increases. I am not so sure that coal costs will decrease very soon, but I do believe that as we keep on getting the old gas appliances replaced that the average gas consumption will materially increase. This figure now is only 1200 cu. ft. per month for an average of the 10 months this year, while it is reasonable to expect an average of at least 1500 to 1800 based on other small companies. This increased use per customer would not increase the total cost of reading meters, running the office, nor would it increase the cost of our taxes. The labor cost at the works would not be increased but the total cost of coal and oil would be greater. When you consider the increased revenue we would receive from this additional use and realize that our total operating cost would only be increased very slightly you can readily realize that the cost per 1000 cu. ft. would be much lower and the business may then be conducted profitably. It is from this condition that rate reductions can be expected.

## Gas Used in Cutlery Factory

The Northampton Gas Light Company has just recently completed an installation of burner equipment and furnaces for the Northampton Cutlery Company which is proving very satisfactory.

The old equipment, which consisted of various types of furnaces using a low pressure, or the two pipe system, was found to be unsatisfactory for many reasons. The model just installed is a one-pipe system of high pressure used for anneal, cyanide hardening, die hardening and drop forging. Gas is supplied to these burners under pressure varying from 10 to 12 pounds and by a compressor driven by a 7½ H. P. motor.

The steel is heated to various degrees of temperature, according to the nature of the operation, the die hardening furnace ranging, for instance, from 1,400 to 2,100 degrees F. The annealing furnace is heated from 1,200 to 1,400 degrees and the cyanide to 1,200 degrees F.

Four rivet heaters have been installed for heating forgings and are already doing more than was expected of them. Steel forgings from 3/16 to 5/8 inch diameter are heated in these furnaces and keep the operators going at a steady pace all day. The furnace is brought to heat in less than five minutes from the time the burner is lighted. This eliminates the old method of being obliged to wait for a coal fire to get started, the removal of ashes, etc. An even temperature is always maintained, doing away with the scale on the metal, which is an important item in the manufacture of high grade cutlery.

The advantage of this system over the old one lies mainly in its simplicity. It does away with all guesswork by the operator and is always under easy control.

Moreover, gas service is instantly available and is as constant as human foresight can make any service.

## Invite Gas Ad Men to Join Association

Two hundred invitations were mailed to as many advertising men in the gas industry last week, asking them to take out membership in and become actively affiliated with the recently organized Public Utilities Advertising Association, which has been admitted to membership as a distinct and permanent department of the Associated Advertising Clubs of the World.

In a letter to the gas advertising men, Benjamin E. Ling, chairman of the Membership Committee, writes:

"Formation of this Association fills a want long felt by all who have had anything to do with the advertising or publicity of any public utility company.

"Its existence means recognition of the public utility advertisers by the advertising profession and, above all else, identifies the great utilities of the country with the 'Truth in Advertising' movement, that superb, confidence-winning slogan of the Associated Advertising Clubs of the World.

"As members of the Associated Advertising Clubs of the World, the utilities are bound to receive the benefit of enhanced and strengthened public confidence in the integrity of utility advertising. As members of this Association, you and your company will be in a position to command and inspire greater public confidence by reason of the fact that this organization has the endorsement of the National Advertising Commission in advertising practices.

"Your standing and prestige will be made the stronger by reason of membership in this organization, for the reason that the advertising media throughout the country, and the public at large, realize that as members of this world-wide organization, your advertising and publicity has the sanction and approval of the best and most high-minded association of advertising specialists.

"This Association wants your membership to help in rallying together a hundred per cent organization of utilities' advertisers, and believes that you will want to become a member for the benefits that are certain to accrue to both you and your company. Membership dues are but $5.00 and checks should be sent to G. F. Oxley, N. E. L. A., 29 W. 39th Street, New York City."

# Syd's Scribblings

Upon this page I'll write my lay
Of things you think and do and say.
I'll write of men, both large and small,
Of happenings to one and all.
Of lodge, of business and of club,
Of brilliant man and silly dub.
The man who really pulls a stunt
Will find his name right out in front.
I'd rather praise than I would roast,
I'll never knock when I can boast.
Beware. Look out, beginning now.
And so, gas men, I make my bow.

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### My Honest-to-Goodness Opinion of a Peddler

Those who see the traveling man in a hotel lobby, attired in a nobby suit, a fat Havana between his teeth and a smile on his face, would hardly grant that there is art in his occupation.

No man, it matters not what his calling in life, needs more to be blessed with a variety of accomplishments than does the peddler. First and foremost, he must be a reader of human nature, not a guesser, but a true reader. Every man he comes in contact with is different and no two can be treated alike.

One can be slapped on the back in half an hour after an introduction and told a funny story. Another will be reserved no matter how long you may know him. The first man expects the story, the second would frown if you started to tell it. One man will accept a cigar with good will, the other will think you are trying to bribe him. The real reader of human nature will increase his sales every trip, while another man who does not understand his customers may never do anything in the same territory, with the same line of goods and the same prices.

A good peddler must be able to conceal his feelings. His wife, mother, or child may be on the point of death, he may be in debt, his sales may be poor, but this must be kept beneath the surface. His face must always wear a smile and his lips utter a pleasant greeting to all those with whom he comes in contact.

Last, but not least, the peddler must be a gentleman, both in appearance and at heart. He must be polished, he must be well read, he must know how, when and about what to talk.

All in all the peddler must have the good characteristics of the best of men and as few of the faults as possible. Of course, there are many men on the road who do not possess these qualities, but they are not and never will be classed as real successes.

Therefore, never judge a peddler by the clothes he wears or say that he is happy because he has a smile on his face. The clothes and the smile are as much a part of his stock in trade as his sample case and his order book.

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### Letters to Santa Claus

Dear Santa Claus:

I could hardly expect you to bring all of my children something, but do the best you can.

R. H. Burdick.

Dear Santa Claus:

I'm a good little boy and I don't want much. Please bring me a whole stocking full of Standardized Appliance Prices.

A. P. Post.

Dear Santa:

Please bring me a lot of money to spend on direct by mail advertising. Letters and pictures and folders, you know.

J. P. Hanlon.

Dear Santa Claus:

Please bring me a bow and arrow, an airgun and a cannon suitable for killing politicians who attack the Service Charge.

W. J. Clark.

Dear Santa:

Please bring me a orange, a lollypop and a book full of meter orders.

P. F. McEnaney.

Dear Santa Claus:

Please bring me a new niblick, a new mashie, a driver and some golf balls that will go not less than two hundred and fifty yards on every shot.

George Humphrey.

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She was a dainty creature,
Dreamy eyes and fluffy hair.
A smile most captivating
And an artful baby stare.
She had a father who was wealthy,
Could afford to dress her well,
Entertained on all occasions,
So of course she was a belle.

He was a picture of young manhood,
Large of frame and full of grace,
With a manner fascinating
And a handsome, godlike face.
He was a gas appliance peddler,
Welcome everywhere he went,
Whether he was there for pleasure
Or upon his duties bent.

They met at some swell function
In the usual, formal way,
And fell in love at once, of course,
Is what you're going to say.
Well, they didn't fall in love at all,
This man and maid demure.
They simply bowed and smiled and said:
"Delighted, I am sure."

At parties, hops and football games
Since then they've often met,
And maybe they will fall in love,

BUT THEY HAVEN'T DONE IT YET.

# Public Utilities Securities Market Report

## Prices of Representative Gas Bonds

(Quotations furnished by The National City Company)

| Company. | | Maturity | Dec. 21, 1922 Bid | Asked |
|---|---|---|---|---|
| American Lt. & Trac. Co. | Five Year 6s | May 1, 1925 | 109½ | 110½ |
| Brooklyn Union Gas Co. | First Consol. 5s | May 1, 1945 | 95½ | 96½ |
| Columbia Gas & Elec. Co. | First 5s | May 1, 1927 | 95¾ | 96¾ |
| Consol. Gas, Elec. Lt. & Pr. Co. of Baltimore | First Ref. 7½s | Dec. 1, 1945 | 110 | 111 |
| Consol. Gas, Elec. Lt. & Pr. Co. | General 4½s | Feb. 14, 1935 | 90¾ | 92 |
| New Amsterdam Gas Co. | First Consol. 5s | Jan. 1, 1948 | 84 | 86 |
| Denver Gas & Elec. Co. | Gen. (now 1st) 5s | May 1, 1949 | 92½ | 94 |
| Detroit City Gas Co. | Gold 5s | Jan. 1, 1923 | 100 | — |
| Equitable Illum. Gas Lt. Co. of Philadelphia | First 5s | Jan. 1, 1928 | 101½ | 103 |
| Hudson County Gas Co. | First 5s | Nov. 1, 1949 | 92¾ | — |
| Laclede Gas Light Co. | Ref. & Ext. 5s | Apr. 1, 1934 | 92 | 93 |
| Louisville Gas & Elec. Co. | First & Ref. 7s | Called Dec. 1 | 100 | — |
| Michigan Light Co. | First & Ref. 5s | Mar. 1, 1946 | 91 | 93 |
| Milwaukee Gas Light Co. | First 4s | May 1, 1927 | 92⅝ | 93¼ |
| Pacific Gas & Elec. Co. | Gen. & Ref. 5s | Jan. 1, 1942 | 92¼ | 92¾ |
| Pacific Gas & Elec. Co. | First & Ref. 7s | Dec. 1, 1940 | 105½ | — |
| Cal. Gas & Elec. Corp. | Unif. & Ref. 5s | Nov. 1, 1937 | 96¼ | 96½ |
| Peoples' Gas Lt. & Coke Co. | Refunding 5s | Sept. 1, 1947 | 89½ | 93 |
| Chicago Gas Lt. & Coke Co. | First 5s | July 1, 1937 | 93⅞ | — |
| Portland Gas & Coke Co. | First & Ref. 5s | Jan. 1, 1940 | 90 | 92 |
| Seattle Lighting Co. | Refunding 5s | Oct. 1, 1949 | 82½ | 85 |
| Southern California Gas Co. | First 6s | Nov. 1, 1950 | 97 | 99 |
| Utica Gas & Electric Co. | Ref. & Ext. 5s | July 1, 1957 | 91½ | 92½ |
| Washington Gas Light Co. | General 5s | Nov. 1, 1960 | 95½ | 97 |
| Western States Gas & Elec. Co. of California | First & Ref. 5s | June 1, 1941 | 91 | 93 |

## Providence Company Again Offers Stock to Its Customers

Providence, R. I.—The Providence Gas Company has mailed to its customers circulars offering to them, for the second time, a limited amount of the company's stock at $66 a share.

In making this announcement, President C. H. Manchester said:

"When we made a similar offer in December, 1920, the stock which was available was all taken up in a few days and many applications for stock were received after the supply was exhausted. In our circular of Dec. 31, 1920, we stated that we had given our employees an opportunity to buy a limited amount of our stock on the installment plan. A few months ago, when they had completed paying for that stock we offered them a second opportunity with the result that the available stock was over-subscribed 58 per cent.

"At the present time over 70 per cent of our employees are stockholders in their company and therefore have a deep interest in its welfare.

"We have experienced considerable difficulty in finding a sufficient amount of our stock to warrant an offer of stock to our customers at this time. Within the last few days we have secured a limited number of shares at $66 per share and are offering it to our customers at exact cost to us.

"We are very glad to be able to make this offer of stock to our customers because we believe that we are affording them an excellent investment and that a wide distribution of our stock among our customers will benefit not only them, but the community in general, by causing a greater interest in our affairs and a much more general knowledge of the efforts we are making to serve our community in the best possible manner.

"As the number of shares available is limited, I would advise those who desire to accept our offer to send in their applications promptly. Applications will be accepted strictly in the order received until the supply of stock is exhausted."

Customers of the company may purchase for themselves or for members of their immediate families not more than five shares for any one person, provided that on the date of the receipt of the application the applicant does not own more than 10 shares of the company's stock. Stock cannot be issued in the name of a minor.

Payments may be made in cash or in four installments. No applications are to be considered after the shares available are exhausted.

## Lower Gas Rate Will Be in Effect June 1

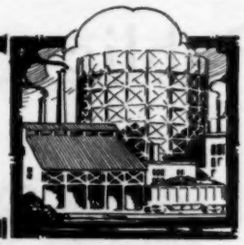
Petersburg, Va.—Petersburg people will not begin receiving the benefits from a lower gas rate until June 1, 1923, according to reports. The present rate is $2 per thousand cubic feet, but starting next June it will be reduced to $1.75. This date has been set by the State Corporation Commission, and the gas company has withdrawn its appeal, apparently satisfied with the agreement.

After hearing the gas company's petition for an extension of time, the commission entered an amendment to the order making the new rate of $1.75 effective next June.

## To Reduce Rate 10 Cents

On Feb. 1, 1923, the Northampton Gas Light Co., Northampton, Mass., will reduce its gas rate 10 cents per 1,000 cu. ft., making the rate per 1,000 $1.70 gross and $1.60 net.

# NEWS OF THE GAS INDUSTRY



## To Hold International Gas Exhibition in Holland

Dr. L. J. Terneden, manager of the Municipal Gasworks, Amsterdam, Holland, has announced plans for an International Gas Exhibition to be held in Amsterdam Oct. 13 to Nov. 11, 1923. This exhibition will be held in conjunction with the Dutch Association of Gas Engineers. The announcement says:

"Encouraged by the brilliant results from the International Gas Exhibition which was held in this city in 1912 and the success of which was recognized not only in Amsterdam and the whole of Holland but also in foreign countries, I have been authorized by the municipal authorities of Amsterdam to inform you of our intention to organize another international gas exhibition for October-November, 1923.

"This exhibition will aim at giving some idea of all the industries, trades and professions in which gas is used, illustrated as far as possible by apparatus in working order. A special attempt will be made to show the usefulness of gas in large and small industries and establishments, such as metal industry, chemical works, preservation of food articles, milk sterilization, lemonade making, restaurants, bicycle factories, vulcanizing of rubber, etc., etc.; central heating for hotels, churches, schools, large office buildings; hair dressers, bakers, confectioners, butchers, gold and silver smiths; also in hospitals, doctors' and dentists' establishments; briefly, in every imaginable line of business or industry. Furthermore, a general view will be given of all types of apparatus and devices for domestic and scientific purposes and manifestly also exhibits of gas producing plant and material, machines and tools for gas works repair-shops, distribution services, fitters' tools and outfits, etc. A retrospective section will be added.

"The exhibition will take place in the 'Exhibition Hall' of the Dutch Association known as 'The Bicycle and Automobile Industry'. Ferdinand Bolstraat, which, in view of its convenient size, may be considered as very suitable, being entirely on the ground floor, exceedingly well lighted and ventilated. It has in addition the advantage of being easily reached by tram from all parts of the town.

"The exhibition will be held from October 13 to November 11, 1923.

"In order to enhance the public's interest in the numerous applications of gas and to promote or renew their knowledge of the different types of apparatus and in that way to extend the sale of gas, it has been suggested to give lectures and demonstrations of various subjects in connection with the use of gas and thereby give manufacturers, dealers and others engaged in this line of business an opportunity of enlightening visitors on the significance and importance of their exhibits.

"A number of medals and diplomas will be held at the disposal of the jury."

## A. B. Carhart Becomes President of Precision Instrument Co., Inc.

Alfred B. Carhart has resigned his position as vice president and sales manager of the Crosby Steam Gage and Valve Co., to become president and general manager of the Precision Instrument Company, Inc.

Mr. Carhart was for more than ten years works manager of the Crosby factory and has had a large practical experience in manufacturing as well as in sales. Mr. Carhart is a mechanical and electrical engineer, a graduate of Princeton, and before going to Boston was connected with other successful manufacturing companies in New York.

The Precision Instrument Co., Inc., has acquired control of the Precision Instrument Co. of Newark, N. J., well known for its "3 in 1" draft gauges, pressure recording instruments, $CO_2$ Recorders, specific gravity recorders, laboratory gas meters, gas calorimeters, and other lines. The present executive officers, who have been so successful, will retain their connection with the company.

It is expected that the business will be enlarged considerably, with new capital, adding other specialties, besides staple lines of gauges, valves and fittings.

Mr. Carhart will assume his new duties at once. The company's New York office will be in the Engineering Building, 114 Liberty Street. The factory will later be moved to New York.

## New Business Department Makes Personnel Changes

Members of the industry will be interested in knowing that the following changes in the personnel of the New Business Department have recently taken place:

S. F. Bates, former representative of the Bristol Gas and Electric Company, has been promoted to the new business managership of the Bristol Gas and Electric Company, succeeding E. J. McGlinchey.

Mr. McGlinchey was transferred to the new business managership of the Knoxville Gas Company. The Knoxville Company, for the past couple of years, has been without a new business department and Mr. McGlinchey was transferred to this company to take up and direct the resumption of new business in this property.

R. T. Hildebrandt, former representative of the Western Light and Power Company, will be new business manager of the Pueblo Gas and Fuel Company. This company has also been without a complete new business department for some time.

## Pollitt on Inspection Trip

L. Irving Pollitt, vice president and general manager Southern Gas & Electric Corporation, Baltimore, Md., has just completed an inspection trip to the Southern's properties. Mr. Pollitt is confident that conditions are showing an upward turn and that the gas industry as a whole will show a decided increase in 1923.

## Price of Gas Drops 5 Cents

Brockton, Mass.—The special committee from Brockton and surrounding towns which has been holding conferences for a reduction of gas rates, has made a general announcement of the Brockton Gas Light Company to reduce the price of gas five cents commencing Jan. 1, and a second reduction of five cents April 1, if conditions warrant. The rates, effective Jan. 1, are as follows:

BROCKTON

| | Gross | Discount | Net |
|---|---|---|---|
| First 100 cu. ft. per month ... | $.75 | $.05 | $.70 |
| Next 400 cu. ft. per month ... | .22 | .015 | .205 |
| Next 19,500 cu. ft. per month. | .14 | .015 | .125 |
| Next 30,000 cu. ft. per month | .13 | .015 | .115 |
| Next 50,000 cu. ft. per month. | .12 | .015 | .105 |

TOWNS
(Except Sharon)

| | | | |
|---|---|---|---|
| First 100 cu. ft. per month ... | $.85 | $.05 | $.80 |
| Next 600 cu. ft. per month ... | .27 | .015 | .255 |
| Next 19,300 cu. ft. per month. | .15 | .015 | .135 |
| Next 30,000 cu. ft. per month. | .14 | .015 | .125 |
| Next 50,000 cu. ft. per month | .13 | .015 | .115 |

## Gas Company Employees Form Safety Committee

Realizing that a series of serious injuries can soon disorganize a department and affect an entire organization, it was decided by the employees of the Northampton Gas Light Co., Northampton, Mass., to organize an Accident Prevention Committee, made up of employees of the various departments. The committee is now organizing and its slogan is "Safety First." It will try to bring home to every employee the fact that "an ounce of prevention is worth a pound of cure." The duties of this committee will be as follows:

Extra effort toward safety education of employees.

To safeguard machinery and tools used by employees.

To make periodical inspections of all departments.

To make practical suggestions where safeguards can be installed.

To study first aid methods and to see that first aid kits are kept supplied.

To investigate every accident and to report how it could have been prevented.

Two members of the Accident Committee are now taking the "First Aid to the Injured" course which is being held at Northampton under the supervision of the American Red Cross and the New Eng. Tel. & Tel. Co. The course covers first aid to a wide range of accidents, including the prone pressure method of resuscitation from all cases of suspended respiration due to inhalation of gas, smoke, fumes, etc. When these two members complete their course they will be in a position to act as instructors for teaching all employees "first aid" to the injured.

## Compromise Made on Gas Rate

Port Arthur, Tex.—The city commission did not fix a gas rate at a recent meeting, as decided on at the session of the special committee which was held in the chamber of commerce rooms.

Manager F. Y. Lowe, of the Peoples Gas Company, appeared before the commissioners and stated that he would not consider the body fixing an arbitrary rate until such time as the appraising engineers completed their work in the plant, but would agree to make a refund to all consumers, starting with December bills, after the matter of rates had been settled by the report of the appraisers.

The question was immediately raised as to what the company proposed to do to assure the consumers that they would get a refund and whether or not Mr. Lowe would be willing to place an amount of money in escrow to insure the refund.

He said that the company would do this but he was of the opinion that it was not necessary as he and his associates proposed to continue in business in Port Arthur and that the gas company would not run away.

Mr. Lowe intimated that he was prepared to take the matter into court in the event that the city attempted to fix an arbitrary rate at this time and that all he was asking was that he be allowed to proceed, pay bills on the estimated amount collectible each month on the present basis, and wait for an adjustment based on the report of the appraising company.

City Attorney V. J. Wister expressed the opinion that if there was another way of getting the matter temporarily adjusted, by the company depositing a fund to take care of any refunds necessary, it would be a better plan than for the city to establish a rate at this time.

Mayor Logan stated that no action would be taken and issued a call for a meeting of the committee of 18 citizens, who were appointed to handle the matter, for some time next week, the meeting to be held in the city hall in the commissioner's room.

## Booklet on House Heating

A most interesting booklet, "The Solution of the Heating Problem," is being issued by the Dallas (Tex.) Gas Company to its customers to encourage the general use of gas for house heating purposes by means of a central furnace.

The booklet is profusely illustrated with views of homes in Dallas that are thus equipped and it also tells, in interesting fashion, of the many advantages of gas for this work.

The pamphlet is a unique addition to gas industry advertising literature and it is said that it has been very successful in producing results.

## Gas Co. Buys Plot for New Main Office

Brooklyn, N. Y.—The Flatbush Gas Company, a subsidiary of the Brooklyn Union Gas Company, has purchased a large section of the old car barn plot on Flatbush Avenue, between Duryea Place and Tilden Avenue.

The gas company purchased the plot in anticipation of the growth of the Flatbush section and because it felt ultimately it would be necessary to build a large Flatbush main office there to take the place of its present office.

## Uniforms for Meter Readers

Recently the Arlington Gas Light Co. equipped their meter readers with uniform hats with the words "Arl. Gas L'g't Co." on the front.

Very few people now question the meter readers, and the time saved that they used to spend explaining who they were has more than paid for the expense of the hats.

## Issues Mother Goose Booklet as Good-Will Builder

The Wisconsin Utilities Association has prepared a booklet entitled "20th Century Mother Goose Rhymes, by the Granddaughter of Old Mother Goose," which deals with the various branches of public utility service.

The booklet is well prepared in two colors and is being used by member companies of the association as good-will builders. It can be obtained from the association, whose headquarters are in Madison, Wis., for $2.00 per hundred, which is the cost price of printing.

A sample of the contents follows:

Ten busy gas men
They serve your home and mine,
One has to buy the coal
And that leaves nine.

Nine busy gas men
They have to pay the freight,
One has to keep the books
And that leaves eight.

Eight busy gas men
They earn a home in Heaven,
One sells a little stock
And that leaves seven.

Seven busy gas men
Each one does his tricks,
One shovels in the coal
And that leaves six.

Six busy gas men
They help their city thrive,
One cleans and cools the gas
And that leaves five.

Five busy gas men
Each year they serve some more,
One lays pipe to your house
And that leaves four.

Four busy gas men
Each one a busy bee,
One sells the coke they make
And that leaves three.

Three busy gas men
Have such a lot to do,
One keeps the meters right
And that leaves two.

Two busy gas men
Their work is never done,
One explains the use of gas
And that leaves one.

One busy gas man
Is left all alone,
Has to go and fix the stove
And that leaves none.

None around to hear you say
What you want or when,
Turn the valve, there you have
The fruit of these ten.

## Denver Company to Spend $250,000 on Plant

Denver, Colo.—Immediate expenditure of $250,000 in improving the gas plant of the Denver Gas and Electric Light Company has been authorized, General Manager C. N. Stannard of the company has announced.

Installation of an eleven-foot water gas generator already has been begun, and this is to be in service early next month. It will add 3,000,000 cubic feet daily to the 7,500,000 cubic feet daily capacity of the plant. Officials declare it will supply sufficient gas to meet the city's needs adequately until other details of the gas expansion program can be carried out.

Henry L. Doherty, head of the Cities Service Corporation, has announced that Denver is to be made the first city in the world with its homes heated with artificial gas. As a step toward the completion of this program, he has promised, Mr. Stannard announced, that the second of the new "shaft furnaces," which are now being perfected in Toledo, shall be installed in Denver.

Addition of a shaft furnace to the Denver gas making equipment, it is said, will make possible a reduction in gas rates for household heating and large industrial consumption. Manager Stannard has just returned from a business trip through the east, visiting Toledo, Ohio, Atlantic City, New York and other points. While in New York he had a number of conferences with Mr. Doherty concerning proposed improvement in the Denver plant. Concerning these, he said:

"I was given positive assurance that Denver is to be well taken care of in both gas and electrical equipment during the coming year. The chief activity, however, will be in the gas department. For immediate use, I was authorized to spend a quarter of a million dollars. This is to be followed by an additional amount, necessary to carry out Mr. Doherty's program in making Denver the first city in the world to heat homes with artificial gas.

"The first unit of the new gas manufacturing equipment is already being installed at the gas plant, and others are to follow as rapidly as possible. This will include one of the new shaft furnaces, the second to be installed in the country.

"A goodly number of homes in the city are at present being successfully heated with gas. Both service and cost have proved satisfactory.

"The additional equipment which is being installed and which it is proposed to install will add about 10,000,000 cubic feet to our daily production, which now is about 7,500,000 cubic feet."

The shaft furnace referred to by Manager Stannard, which is to be installed in Denver after the Toledo experiments have been concluded, is described by Superintendent George Worley of the gas department as "a complete gasification plant which is a combination of the present coal and water gas plants."

The shaft stands approximately sixty feet in the air. The coal is put in at the top by an elevator, and as it gravitates to the bottom all the various by-products are taken out. The residue is a clear ash. Engineers declare it is an invention which promises to revolutionize the gas manufacturing methods of the world. Until the Toledo experiments are completed it will not be known exactly how much the new system will reduce the present cost of gas making.

Gas company officials have claimed for some time that their gas department has been losing money and the expansion program is being carried through on the theory that gas consumption can be increased to a point where the department's operation will show a profit.

## Hugh Allen Leaves Wilson, N. C.

Hugh Allen has resigned as manager Wilson, N. C., Gas Department. R. J. Grantham is acting as manager *pro tem.*

## F. L. Marshall to Represent Rotary Club

F. L. Marshall, G. M. Gas Light Co., has been nominated by the Rotary Club of Augusta to represent the Public Utilities Division as a member of the Business Council of the Board of Commerce.